

=> fil reg

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STRUCTURE FILE UPDATES: 18 OCT 2006 HIGHEST RN 910777-14-9  
 DICTIONARY FILE UPDATES: 18 OCT 2006 HIGHEST RN 910777-14-9

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 experimental property data in the original document. For information  
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<http://www.cas.org/ONLINE/UG/regprops.html>

=> d sta que 13

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L1          STR
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      S      O      O      S
      |      |      |      |
N~C~S~Ak~C~N~Ak~N~C~Ak~S~C~N
1  2  3  5  6  7  9 10 11 12 14 15 16

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NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM  
 DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED  
 NUMBER OF NODES IS 17

STEREO ATTRIBUTES: NONE

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L2          8 SEA FILE=REGISTRY SSS FUL L1
L3          3 SEA FILE=REGISTRY ABB=ON PLU=ON L2 AND (C37H68N4O5S4 OR
          C36H68N4O4S4 OR C38H70N4O5S4)

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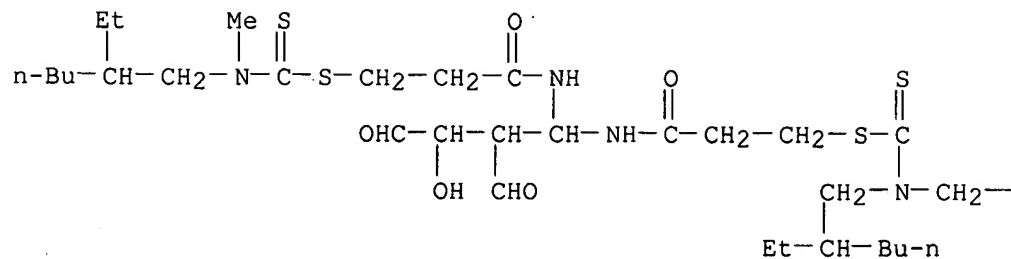
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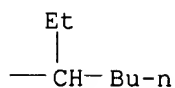
L3  ANSWER 1 OF 3  REGISTRY  COPYRIGHT 2006 ACS on STN
RN   865875-06-5  REGISTRY
ED   Entered STN:  24 Oct 2005
CN   Carbamodithioic acid, bis(2-ethylhexyl)-, 14-ethyl-5-(1-formyl-2-hydroxy-3-
     oxopropyl)-12-methyl-3,7-dioxo-11-thioxo-10-thia-4,6,12-triazaoctadec-1-yl
     ester (9CI) (CA INDEX NAME)
MF   C38 H70 N4 O5 S4
SR   CA
LC   STN Files:  CA, CAPLUS, USPATFULL

```

PAGE 1-A



PAGE 1-B



\*\*PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT\*\*

1 REFERENCES IN FILE CA (1907 TO DATE)

1 REFERENCES IN FILE CAPLUS (1907 TO DATE)

REFERENCE 1: 143:349757

L3 ANSWER 2 OF 3 REGISTRY COPYRIGHT 2006 ACS on STN

RN 865875-05-4 REGISTRY

ED Entered STN: 24 Oct 2005

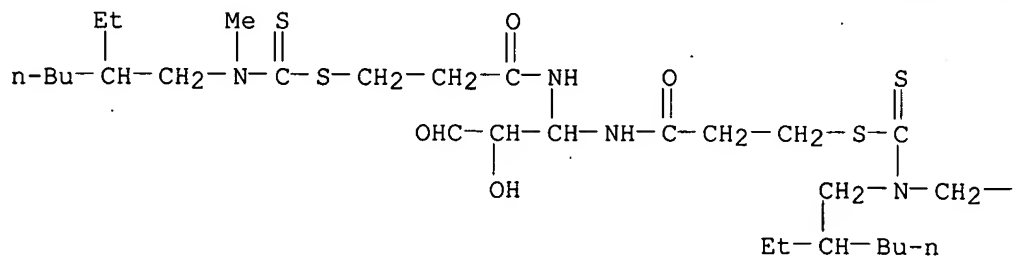
CN Carbamodithioic acid, bis(2-ethylhexyl)-, 14-ethyl-5-(1-hydroxy-2-oxoethyl)-12-methyl-3,7-dioxo-11-thioxo-10-thia-4,6,12-triazaoctadec-1-yl ester (9CI) (CA INDEX NAME)

MF C36 H68 N4 O4 S4

SR	CA
----	----

LC STN Files: CA, CAPLUS, USPATFULL

PAGE 1-A



$$\begin{array}{c} \text{Et} \\ | \\ \text{---CH---Bu-n} \end{array}$$

1 REFERENCES IN FILE CA (1907 TO DATE)  
1 REFERENCES IN FILE CAPLUS (1907 TO DATE)

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L3 ANSWER 3 OF 3  REGISTRY  COPYRIGHT 2006 ACS on STN
RN 865875-04-3  REGISTRY
ED Entered STN: 24 Oct 2005
CN Carbamodithioic acid, bis(2-ethylhexyl)-, 14-ethyl-5-(1-hydroxy-2,3-
dioxopropyl)-12-methyl-3,7-dioxo-11-thioxo-10-thia-4,6,12-triazaoctadec-1-
yl ester (9CI) (CA INDEX NAME)
MF C37 H68 N4 O5 S4
SR CA
LC STN Files: CA, CAPLUS, USPATFULL
```

$$\begin{array}{ccccccc} \text{Et} & & \text{Me} & \text{S} & & \text{O} & \\ | & & | & || & & || & \\ n\text{-Bu-CH-CH}_2\text{-N-C-S-CH}_2\text{-CH}_2\text{-C-NH} & & & & & & \\ & & & & & & \\ & & \text{OHC-C-CH-CH-NH-C-CH}_2\text{-CH}_2\text{-S-C} & & & & \\ & & || & | & & & || \\ & & \text{O} & \text{OH} & & & \text{S} \\ & & & & & & | \\ & & & & & & \text{CH}_2\text{-N-CH}_2\text{-} \\ & & & & & & | \\ & & & & & & \text{Et-CH-Bu-n} \end{array}$$
$$\begin{array}{c} \text{Et} \\ | \\ \text{---CH---Bu-n} \end{array}$$

1 REFERENCES IN FILE CA (1907 TO DATE)  
1 REFERENCES IN FILE CAPLUS (1907 TO DATE)

REFERENCE 1: 143:349757

=> d his

(FILE 'HOME' ENTERED AT 16:28:37 ON 19 OCT 2006)  
SET COST OFF

FILE 'REGISTRY' ENTERED AT 16:28:51 ON 19 OCT 2006  
ACT LANG815/A

-----  
L1 STR  
L2 8 SEA FILE=REGISTRY SSS FUL L1  
-----  
L3 3 S L2 AND (C37H68N4O5S4 OR C36H68N4O4S4 OR C38H70N4O5S4)  
L4 1 S ACRYLAMIDE/CN  
L5 2 S (ETHANEDIAL OR PENTANEDIAL)/CN  
L6 1 S CARBON DISULFIDE/CN

FILE 'HCAPLUS' ENTERED AT 16:30:20 ON 19 OCT 2006  
L7 49535 S L6 OR CS2 OR CARBON() (DISULFIDE OR DISULPHIDE)  
L8 148 S L7 AND (L4 OR ACRYLAMIDE)  
L9 6 S L8 AND (L5 OR ETHANEDIAL OR PENTANEDIAL OR GLYOXAL OR GLUTARA  
L10 6 S L9 AND (PY<=2004 OR PRY<=2004 OR AY<=2004)  
SEL RN

FILE 'REGISTRY' ENTERED AT 16:32:12 ON 19 OCT 2006  
L11 913 S E1-E913  
L12 54 S L11 AND (N AND C AND H)/ELS AND 3/ELC.SUB  
L13 31 S L12 AND NR>=1  
L14 23 S L12 NOT L13  
SEL RN 6 10 12 15  
L15 4 S E914-E917

FILE 'HCAPLUS' ENTERED AT 16:35:14 ON 19 OCT 2006  
L16 5 S L15 AND L10  
L17 1 S L15 (L) RACT+NT/RL AND L16  
L18 1 S L3  
L19 1 S L17,L18

FILE 'REGISTRY' ENTERED AT 16:35:51 ON 19 OCT 2006

=> fil hcaplus

FILE 'HCAPLUS' ENTERED AT 16:36:04 ON 19 OCT 2006  
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FILE COVERS 1907 - 19 Oct 2006 VOL 145 ISS 17

FILE LAST UPDATED: 18 Oct 2006 (20061018/ED)

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This file contains CAS Registry Numbers for easy and accurate  
substance identification.

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L19 ANSWER 1 OF 1 HCAPLUS COPYRIGHT 2006 ACS on STN  
 AN 2005:1078332 HCAPLUS  
 DN 143:349757  
 ED Entered STN: 07 Oct 2005  
 TI Dithiocarbamate-type multifunctional additives for lubricating oils and  
 fuels  
 IN Baranski, John R.; Nalesnik, Theodore E.  
 PA Crompton Corporation, USA  
 SO U.S. Pat. Appl. Publ., 8 pp.  
 CODEN: USXXCO  
 DT Patent  
 LA English  
 IC ICM C07C0333-20  
 INCL 558236000  
 CC 51-8 (Fossil Fuels, Derivatives, and Related Products)  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2005222447	A1	20051006	US 2004-815579	20040331 <--
	WO 2005102994	A1	20051103	WO 2005-US7764	20050307 <--
	W:			AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW	
	RW:			BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG	
PRAI	US 2004-815579	A	20040331	<--	

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
US 2005222447	ICM	C07C0333-20
	INCL	558236000
	IPCI	C07C0333-20 [ICM,7]; C07C0333-00 [ICM,7,C*]
	IPCR	C07C0333-00 [I,C*]; C07C0333-20 [I,A]; C10L0001-10 [I,C*]; C10L0001-24 [I,A]; C10M0135-00 [I,C*]; C10M0135-18 [I,A]
	NCL	558/236.000
	ECLA	C07C333/20
WO 2005102994	IPCI	C07C0333-20 [ICM,7]; C07C0333-00 [ICM,7,C*]; C10M0135-18 [ICS,7]; C10M0135-00 [ICS,7,C*]; C10L0001-24 [ICS,7]; C10L0001-10 [ICS,7,C*]
	IPCR	C07C0333-00 [I,C*]; C07C0333-20 [I,A]; C10L0001-10 [I,C*]; C10L0001-24 [I,A]; C10M0135-00 [I,C*]; C10M0135-18 [I,A]
	ECLA	C07C333/20
OS	MARPAT	143:349757

- AB Dithiocarbamate-type multifunctional additives for lubricating oils and fuels are of general formula  $R_1N-C(:S)-S-R_3-C(:O)-NH-R_4-NH-C(:O)-R_3-S-C(:S)-NR_{12}$  (I), in which  $R_1$ ,  $R_2$ ,  $R_5$ , and  $R_6$  = C1-30-alkyl, C3-30-branched alkyl, C3-12-cycloalkyl, C5-12-aryl, or C6-12-alkylaryl;  $R_3$  = C2-20-alkylene, and  $R_4$  = C1-20-alkylene substituted with such groups as -CHO, -CH(OH)-C(:O)-CHO, or -C(:O)-CH(OH)-CHO. I is synthesized as the reaction product from: (1) a di(hydrocarbyl)thiocarbamate intermediate derived from the reaction of a dihydrocarbyl amine and CS<sub>2</sub>, (2) an amide of formula  $R_7-C(:O)NH_2$  ( $R_7$  is C2-30-alkenyl), and (3) a carbonyl compound. A preferred alkenyl amide (component (2)) is acrylamide; a preferred carbonyl compound (component (3)) is a dialdehyde. The dithiocarbamate-type additives impart antioxidant, antifriction, and antiwear properties to lubricating oils, diesel fuel, and gasoline.
- ST dithiocarbamate lubricating oil fuel multifunctional additive; ethylhexyl amine dithiocarbamate dialdehyde acrylamide reaction product; diesel fuel gasoline multifunctional additive
- IT Lubricating oil additives  
(antifriction; dithiocarbamate-type multifunctional additives for lubricating oils and fuels)
- IT Lubricating oil additives  
(antioxidants; dithiocarbamate-type multifunctional additives for lubricating oils and fuels)
- IT Lubricating oil additives  
(antiwear; dithiocarbamate-type multifunctional additives for lubricating oils and fuels)
- IT Diesel fuel additives  
Gasoline additives  
Lubricating oil additives  
(multifunctional; dithiocarbamate-type multifunctional additives for lubricating oils and fuels)
- IT Aldehydes, uses  
Carbonyl compounds (organic), uses  
Dialdehydes  
Dicarbonyl compounds  
RL: MOA (Modifier or additive use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(reaction products with unsatd. amides and dialkyldithiocarbamates; additives; dithiocarbamate-type multifunctional additives for lubricating oils and fuels)
- IT Amides, uses  
RL: MOA (Modifier or additive use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(unsatd., reaction products with carbonyl compds. and dialkyldithiocarbamates; additives; dithiocarbamate-type multifunctional additives for lubricating oils and fuels)
- IT Amides, uses  
RL: MOA (Modifier or additive use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
( $\alpha,\beta$ -unsatd., reaction products with carbonyl compds. and dialkyldithiocarbamates; additives; dithiocarbamate-type multifunctional additives for lubricating oils and fuels)
- IT 79-06-1DP, Acrylamide, reaction products with carbonyl compds. and dialkyldithiocarbamates 107-22-2DP, Glyoxal, reaction products with unsatd. amides and dialkyldithiocarbamates 111-30-8DP, Glutaraldehyde, reaction products with unsatd. amides and dialkyldithiocarbamates 594-07-ODP, Dithiocarbamic acid, dialkyl derivs., reaction products with alkenylamides and carbonyl compds. 865875-04-3P 865875-05-4P 865875-06-5P  
RL: MOA (Modifier or additive use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

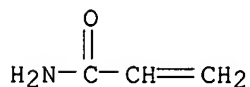
(additives; dithiocarbamate-type multifunctional additives for lubricating oils and fuels)

IT 106-20-7, Di(2-ethylhexyl) amine  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reactions of; dithiocarbamate-type multifunctional additives for lubricating oils and fuels)

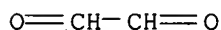
IT 865875-03-2P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
 (synthesis and reactions of; dithiocarbamate-type multifunctional additives for lubricating oils and fuels)

IT 79-06-1DP, Acrylamide, reaction products with carbonyl compds. and dialkyldithiocarbamates 107-22-2DP, Glyoxal, reaction products with unsatd. amides and dialkyldithiocarbamates 111-30-8DP, Glutaraldehyde, reaction products with unsatd. amides and dialkyldithiocarbamates 865875-04-3P 865875-05-4P 865875-06-5P  
 RL: MOA (Modifier or additive use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
 (additives; dithiocarbamate-type multifunctional additives for lubricating oils and fuels)

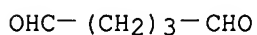
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 CN 2-Propenamide (9CI) (CA INDEX NAME)



RN 107-22-2 HCAPLUS  
 CN Ethanedial (9CI) (CA INDEX NAME)

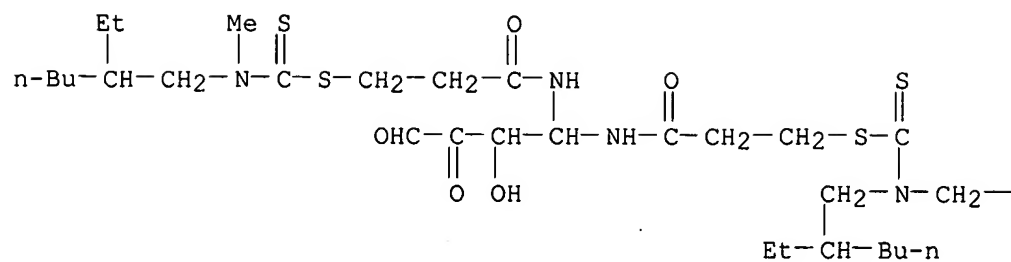


RN 111-30-8 HCAPLUS  
 CN Pentanedial (9CI) (CA INDEX NAME)

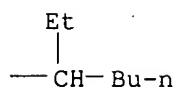


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 CN Carbamodithioic acid, bis(2-ethylhexyl)-, 14-ethyl-5-(1-hydroxy-2,3-dioxopropyl)-12-methyl-3,7-dioxo-11-thioxo-10-thia-4,6,12-triazaoctadec-1-yl ester (9CI) (CA INDEX NAME)

PAGE 1-A



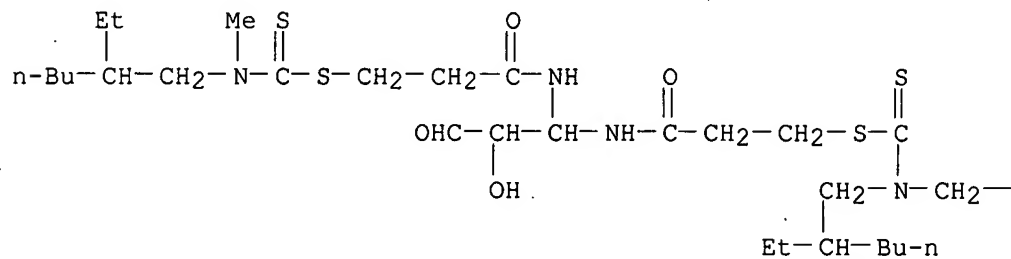
PAGE 1-B



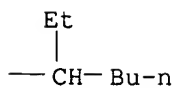
RN 865875-05-4 HCAPLUS

CN Carbamodithioic acid, bis(2-ethylhexyl)-, 14-ethyl-5-(1-hydroxy-2-oxoethyl)-12-methyl-3,7-dioxo-11-thioxo-10-thia-4,6,12-triazaoctadec-1-yl ester (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B

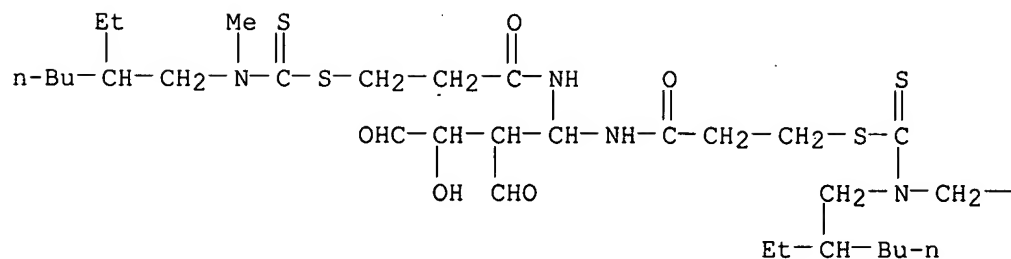


RN 865875-06-5 HCAPLUS

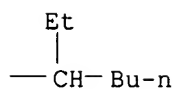
CN Carbamodithioic acid, bis(2-ethylhexyl)-, 14-ethyl-5-(1-formyl-2-hydroxy-3-oxopropyl)-12-methyl-3,7-dioxo-11-thioxo-10-thia-4,6,12-triazaoctadec-1-yl ester (9CI) (CA INDEX NAME)



PAGE 1-A



PAGE 1-B



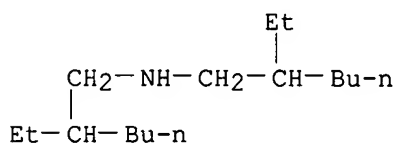
IT 106-20-7, Di(2-ethylhexyl) amine

RL: RCT (Reactant); RACT (Reactant or reagent)

(reactions of; dithiocarbamate-type multifunctional additives for lubricating oils and fuels)

RN 106-20-7 HCAPLUS

CN 1-Hexanamine, 2-ethyl-N-(2-ethylhexyl)- (9CI). (CA INDEX NAME)



Access DB# 204766**SEARCH REQUEST FORM**

Scientific and Technical Information Center

Requester's Full Name: Amy Lamy Examiner #: 82324 Date: 10-17-06  
Art Unit: 1714 Phone Number 30 74057 Serial Number: 10/815579  
Mail Box and Bldg/Room Location: 10D30 Results Format Preferred (circle): PAPER DISK E-MAIL

**If more than one search is submitted, please prioritize searches in order of need.**

\*\*\*\*\*

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Diithiocarbamate derivatives useful as Lubricant and Fuel AdditiveInventors (please provide full names): ~~BRA~~ Baranski, John R. ; Nalesnik, Theodore E.Earliest Priority Filing Date: 3-31-04

*\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

please search claims 12 and 18-21.  
See attached. Thanks.

SCIENTIFIC REFERENCE BR  
Sci & Tech Inf. Ctr.

OCT 17 RECD

Pat. &amp; T.M. Office

\*\*\*\*\*  
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	Type of Search	Vendors and cost where applicable
Searcher: <u>ga</u>	NA Sequence (#) _____	STN <u>✓</u>
Searcher Phone #: <u>22504</u>	AA Sequence (#) _____	Dialog _____
Searcher Location: _____	Structure (#) <u>✓</u>	Questel/Orbit _____
Date Searcher Picked Up: <u>01/10/06</u>	Bibliographic _____	Dr. Link _____
Date Completed: <u>10/19/06</u>	Litigation _____	Lexis/Nexis _____
Searcher Prep & Review Time: _____	Fulltext _____	Sequence Systems _____
Clerical Prep Time: <u>15</u>	Patent Family _____	WWW/Internet _____
Online Time: <u>30</u>	Other _____	Other (specify) _____



# **STIC Search Report**

**EIC 1700**

**STIC Database Tracking Number: 204766**

**TO: Amy T Lang**  
**Location: Remsen 10d30**  
**Art Unit : 1714**  
**October 19, 2006**  
**Phone: 571-272-9057**  
**Case Serial Number: 10 / 815579**

**From: Jan Delaval**  
**Location: EIC 1700**  
**Remsen 4a30**  
**Phone: 571-272-2504**  
**jan.delaval@uspto.gov**

## **Search Notes**